DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/Ala Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-015820
Date Inspected: 09-Jul-2010

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 1900
OSM Departure Time: 700
Location: Shanghai, China

CWI Name:	See below	**CWI Present:**	☑ Yes ☐ No
Inspected CWI report:	☐ Yes ☑ No ☐ N/A	**Rod Oven in Use:**	☑ Yes ☐ No ☐ N/A
Electrode to specification:	☑ Yes ☐ No ☐ N/A	**Weld Procedures Followed:**	☑ Yes ☐ No ☐ N/A
Qualified Welders:	☑ Yes ☐ No ☐ N/A	**Verified Joint Fit-up:**	☑ Yes ☐ No ☐ N/A
Approved Drawings:	☑ Yes ☐ No ☐ N/A	**Approved WPS:**	☑ Yes ☐ No ☐ N/A
		Delayed / Cancelled:	☐ Yes ☑ No ☐ N/A

Bridge No: 34-0006
Component: Tower and OBG Components

Summary of Items Observed:

On this date Caltrans OSM Quality Assurance Inspector (QA Inspector) George Goulet was present during the times noted above for observations relative to the work being performed.

Bay 10

This QA Inspector randomly observed the following work in progress in Bay 10:

SMAW tack welding of weld joint SSD1-TL5-1B/F-15 located on PCMK south tower, lift 5, internal stiffener. Welder was identified as 040581. QC was identified as ZPMC CWI Gao Zhi Chun (QC1). Assisting QC1 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Li Peng Fei (QCA1), who was not a CWI. Welding variables recorded by QCA1 appeared to comply with WPS-B-T-3213-TC-U5b. Also present at this location and appearing to monitor the welding operation was ABF Representative Cui Zhenghua.

ZPMC personnel flame cutting and air-carbon-arc gouging of temporary attachments from PCMK south tower, lift 5, skin A, several areas. See photo below.

SMAW tack welding of weld joints EP3019-001-007, 008 located on PCMK I stiffener to edge plate. Welder was identified as 057239. QC was identified as QC1. Welding variables recorded by QC1 appeared to comply with WPS-B-P-2112-FCM.

Bay 11

This QA Inspector randomly observed the following work being performed in Bay 11:

SMAW welding of weld joint ESD1-SPSA5-7-2B located on PCMK east tower, lift 5, internal splice plate assembly. Welder was identified as 057186. QC was identified as ZPMC CWI Xu Le Feng (QC2). Assisting QC2 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Ma Qian Li (QCA2), who was not a CWI. Welding variables recorded by QCA2 appeared to comply with WPS-B-T-3211-TC-U5b-1. Also present at this location and appearing to monitor the welding operation was ABF Representative Cui Zhenghua.

OBG Trial Assembly Area
This QA Inspector randomly observed the following work in progress in the OBG Trial Assembly Area:

FCAW welding of weld joint OBE9A-002 located on PCMK 9CE/9DE transverse deck joint, near the south (bikepath) side. Welder was identified as 222396. QC was identified as An Qing Xiang (QC3). Assisting QC3 at this location and appearing to be monitoring the welding and recording data was ZPMC QC Wang Li Yang (QCA3), who was not a CWI. Welding variables recorded by QCA3 appeared to comply with WPS-B-T-223(1)-2.

Heavy Dock
This QA Inspector randomly observed the following work being performed on the Heavy Dock:

This QA Inspector observed no welding related work was being performed on the heavy dock. All 4 tower lifts 2 were erect with all 4 tower lifts 3 attached above, respectively. ZPMC personnel were at the 109M double diaphragm level match drilling previously scored holes in the inner struts at the skin A connections of the north, east, and south towers; and in the strut at the skin E connection of the west tower. All holes were being drilled by magnetically held drills. See photo below.

The tower worker access elevator was operated from above the elevator cabin. Two ZPMC personnel stood on the roof of the cabin and operated the elevator from there. The display at near-ground level at the bottom of lift 2 showed an 8 and did not change as the elevator traveled down to that level before this QA Inspector boarded the elevator. As the elevator left the bottom level, the normal beeping warning horn and red flashing light operated as this QA Inspector had seen it operate in the past. However, at approximately 10 meters up from the bottom, the beeping horn and red flashing light stopped as the elevator continued up. At approximately the same time, all lights inside the elevator cabin went out. Later, on the way down, the same thing occurred in reverse, with the cabin lights, beeping horn, and red flashing light coming on only in approximately the last 10 meters.

Crossbeams 7, 8, 9, and 10 were on the ship moored to the end of the Heavy Dock. The open ends of crossbeams 7 and 8 were covered with plastic tarps.

Bay 9 – PMT
This QA Inspector monitored OBG Production Monitoring Test (PMT) #3099 for deck panels DP3099(PL3195A/B/C)-001 and DP3106C(PL3202E/F/G)-001 at Gantry #2. Prior to the start of the PMT, this QA Inspector observed the root openings to be within the 0.0 to 0.5mm tolerance. The magnetic particle test (MT) of the tack welds was noted on the test panel as having been performed by ZPMC MT Inspector Wang Wei on 7/9/10. The visual inspection of tack welds and root gaps was performed by ABF Representative Huang Wen

Guang (PABF), ZPMC CWI Guo Yan Fei (PQC), and this QA Inspector. The tack welds and root gaps appeared to be within prescribed tolerances. This QA Inspector observed that the deck plate of the test panel was 20mm thick and the deck plate of the production panels were 20mm thick. This QA Inspector observed that the test panel was generally representative of the production panels. The ambient temperature was approximately 29°C. Welders were identified respectively, from position 1 through 4, as follows: 059416, 201788, 059418, 059421. ZPMC personnel used an oxy-fuel torch to preheat the specimens to above 60°C and the interpass temperature was still above 60°C without additional heating, in conformance with WPS-B-T-2342-U1-(U-rib)-5. The start time for welding of the 2–12mm x 20mm specimens was approximately 0026 hours on 7/10/10 and the finish time was approximately 0049 hours. This QA Inspector randomly verified and documented the welding amperage, voltage, and travel speed during the gas metal arc welding (GMAW) and submerged arc welding (SAW) processes, welds 1 thru 4 at the completion of both the GMAW root pass and SAW cover pass. The welding variables recorded by PQC appeared to comply with WPS-B-T-2342-U1-(U-rib)-5. The welds were visually inspected by PABF, PQC and this QA Inspector. PQC and PABF informed this QA Inspector that all four welds were acceptable and after random inspection this QA Inspector concurred. This QA inspector randomly witnessed ZPMC ultrasonic testing (UT) inspector, identified as Xue Hai Rong, perform UT on each of the 500 mm test welds for depth of penetration and conformance. This QA Inspector selected ten designated locations for macroetch sampling per contract requirements. Each macroetch sample location was stamped by ZPMC personnel with the number 3099, a number 5, chosen randomly by this QA Inspector as a verification mark, and an individual progressive macroetch identifying number for each macroetch sample. After removal from each of the weld test specimens, polishing, and acid etching of the selected end, the macroetch samples were evaluated using a 7X optical magnifier and accepted by PQC, PABF, and this QA Inspector.

All ten sample macroetch samples appeared to meet requirements and were noted to appear acceptable. See Caltrans U-ribs PMT Inspection Sheet, ZPMC production monitoring test plate inspection report, and Caltrans Macro Etch Log - all dated 7/10/2010 for additional information.

Bays 2, 3, 7

At approximately 0400 hours, 7/9/10, this QA Inspector randomly observed no welding related work being performed in Bays 2, 3, or 7. Five workers dressed in ZPMC welder's white clothes and some welding related equipment, including, but not limited to, face shields were present, but no workers were performimg any welding. At no time did this QA Inspector observe any ZPMC QC or ABF representative presence anywhere in Bays 2, 3, or 7.

Unless otherwise noted, all work observed on this date appeared to generally comply with applicable contract documents.

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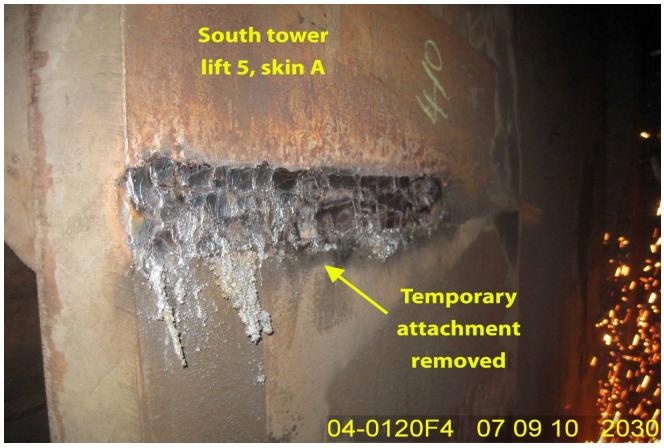

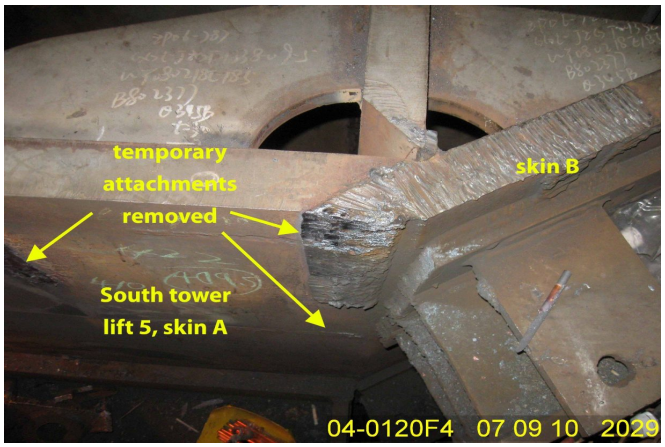

Summary of Conversations:

As noted above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Eric Tsang, 150-0042-2372, who represents the Office of Structural Materials for your project.

Inspected By:	Goulet,George	Quality Assurance Inspector
Reviewed By:	Dawson,Paul	QA Reviewer